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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,838	02/28/2002	Tamer Kadous	010519B1	3037

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Qualcomm Incorporated
Patents Department
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EXAMINER	
SHEW, JOHN	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/086,838	KADOUS ET AL.	
	Examiner	Art Unit	
	John L Shew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02/28/2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-7, 10-14* is/are rejected.

7)☒ Claim(s) *4,8 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 February 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02282002, 07022003*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because

FIG. 3 has input of "OT" to MOD 320. The word above should be concatenated to be PILOT.

FIG. 5 block 524 a function of "DECODE R". The word should be concatenated to be "DECODER".

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the

remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

1. The disclosure is objected to because of the following informalities:

Page 15 line 7 cites “No. 09/826,481” is an incorrect application number as the subject matter disclosed is a single bifocal custom shooters glasses (Patent number 6478422).

Page 21 line 27 cites “Nos. 09/826,481” is an incorrect application number as the subject matter disclosed is a single bifocal custom shooters glasses (Patent number 6478422).

Page 21 line 28 cites “No. 09/776,075” is an incorrect application number as the subject matter disclosed is a process for hard panning of chewable cores and cores produced by the process (Pub No. 2001/0018084).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 3, 5, 6, 7, 10, 11, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paulraj et al. (Patent number 6351499) in view of van Nee (Patent number 6175550) and further in view of Olofsson et al. (Patent number 6167031).

Claims 1, 10, Paulraj teaches a method for determining data capacity for a data transmission over a communication channel in a wireless communication system (FIG. 1, column 3 lines 43-52, column 5 lines 45-58) referenced by the maximizing of data capacity from wireless a transmit unit of a BTS 12 to a stationary receive unit 14D, comprising identifying a set of parameters for the data transmission (Abstract lines 11-21) referenced by data transmission parameters SINR, SNR, power level, BER, packet error rate, estimating one or more characteristics of the communication channel (FIG. 4, column 7 lines 41-49, column 9 lines 32-51) referenced by the estimator 84 of the channel coefficients which depend on the channel communication parameter, deriving a

metric for an equivalent channel based on the set of parameters and the one or more estimated channel characteristics (FIG. 4, column 9 lines 52-67, FIG. 6, column 12 lines 11-24) referenced by signal statistics unit 90 assessing the quality parameter including metric SNR and the use of training unit 70 to establish equivalent channel characteristics, determining a threshold signal quality required for the equivalent channel to support a particular data rate (Abstract lines 11-17) referenced by the level crossing duration of a predetermined threshold or a parameter of the data which includes SNR, and indicating whether or not the particular data rate is supported by the communication channel based on the metric and the threshold signal quality (FIG. 8, column 7 lines 57-67, column 8 lines 1-22) referenced by the optimization of data throughput and determination of the S-T code based on meeting target SINR threshold of value p. Paulraj does not teach data rate, adjusting the metric to minimize packet error rate nor selecting the data rate in response.

Van Nee teaches data rate (column 3 lines 13-28) referenced by the OFDM system transmission rate scaled based on operating parameters.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the data rate of van Nee to the data capacity of Paulraj for the purpose of maximizing a communication parameter in a wireless network.

Olofsson teaches adjusting the metric to form an adjusted metric (FIG. 10, column 12 lines 47-67, column 13 lines 1-18) referenced by the calculation of the Optimal Power $P_{opt(i)}$ for adjustment Step 103, wherein adjusting is done according to a back-off factor (FIG. 10) referenced by the Step 105 factor $P_{opt(i)}$ is determined by the minimum function

for use in adjusting the mean C/I, the back-off factor designed to minimize Packet Error Rate (PER) (column 12 lines 37-46) referenced by the optimal power based on the target C/I target which is based on the quality value Block Level Error Rate BLER, comparing the adjusted metric to the threshold signal quality (FIG. 10) referenced by truncation of $P_{opt(i)}$ through the minimum function Step 105, adjusting the threshold signal quality (FIG. 10) referenced by calculation of the mean C/I by the adjustment factor ($P_{opt(i)} - P$), selecting a data rate in response (FIG. 9, FIG. 10, FIG. 11) referenced by selection of an optimum combination Step 109 and use of P_{opt} on selected link Step 111 with the C/I factor based on the BLER desired as performed by Selector unit 118, selecting a data rate in response to a result of comparing the adjusted metric to the threshold signal quality (FIG. 9, FIG. 10, FIG. 11) referenced by selection of an optimum combination Step 109 and use of P_{opt} on selected link Step 111 with the C/I factor based on the BLER desired as performed by Selector unit 118.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of selecting a combination of modulation and coding according to Olofsson to the data rate parameter maximization of Paulraj and van Nee for the purpose of selecting the RF link that provides the best user quality value.

Claims 2,11, Paulraj teaches wherein the metric is a function of Signal-to-Noise Ratio (SNR) (FIG. 4, column 9 lines 52-67, column 10 lines 1-7) referenced by signal statistics unit 90 assessing the quality parameter including metric signal-to-noise ration (SNR)

and signal-to-interference noise ration (SINR), wherein the metric is Signal-to-Noise Ratio (FIG. 4, column 9 lines 52-67, column 10 lines 1-7) referenced by signal statistics unit 90 assessing the quality parameter including metric signal-to-noise ration (SNR).

Claim 3, 12, Paulraj and van Nee teach a method for maximizing data rate for a data transmission over a communication channel in a wireless communication system. They do not teach determining if a back-off factor is to be applied to the metric.

Olofsson teaches determining if a back-off factor is to be applied to the metric (FIG. 10) referenced by the truncation of $P_{opt(i)}$ Step 105 wherein the determination is performed by the minimum function "min" which selects the minimum of "P_{max} and the max[P_{min}, $P_{opt(i)}$]", if the back-off factor is to be applied adjusting the metric (FIG. 10) referenced by the adjustment to the mean C/I by factor ($P_{opt(i)} - P$) Step 107, and if the back-off factor is not to be applied retaining the metric (FIG. 10) referenced by the results of the min function $P_{opt} = P$ thus the factor ($P_{opt} - P$) results in zero adjustment to the mean C/I at Step 107, applying the back-off factor according to determining if the back-off factor is to be applied to the metric (FIG. 10) referenced by the determination of $P_{opt(i)}$ based on a minimum function Step 105 and if the result is the value P.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of selecting a combination of modulation and coding according to Olofsson to the data rate parameter maximization of Paulraj and van Nee for the purpose of selecting the RF link that provides the best user quality value.

Claim 5, Paulraj teaches a receiver unit (FIG. 7) referenced by the OFDM receive unit, in a wireless communication system (FIG. 1) referenced by the wireless BTS transmit unit 12 to Subscriber receive unit 14D, comprising a channel estimator operative to derive estimates of one or more characteristics of a communication channel used for a data transmission (FIG. 7, column 9 lines 33-67, column 12 lines 25-36) referenced by the space-frequency matrix channel estimator 130 which assess the quality parameter of the channel including SINR, SNR, power level and LCR, a rate selector operative to receive channel estimates from the channel estimator and a set of parameters indicative of a particular rate for the data transmission (FIG. 4, FIG. 5A, , column 11 lines 30-44) referenced by S-T Code Lookup block 100 60 deciding an optimum k to maximize channel capacity where the input data are signal statistics streams 90 94 from the results of the Multi-Channel Estimator 84, derive a metric for an equivalent channel (FIG. 4, column 9 lines 52-67, FIG. 6, column 12 lines 11-24) referenced by signal statistics unit 90 assessing the quality parameter including metric SNR and the use of training unit 70 to establish equivalent channel characteristics, determine a threshold signal quality required for the equivalent channel to support the particular rate (Abstract lines 11-17) referenced by the level crossing duration of a predetermined threshold or a parameter of the data which includes SNR, and indicate whether or not the particular rate is supported by the communication channel based on the metric and the threshold signal quality (FIG. 8, column 7 lines 57-67, column 8 lines 1-22) referenced by the

optimization of data throughput and determination of the S-T code based on meeting target SINR threshold of value p. Paulraj does not teach a metric adjuster using a predetermined back-off factor.

Olofsson teaches a metric adjuster (FIG. 10, column 12 lines 47-67, column 13 lines 1-18) referenced by the calculation of the Optimal Power $P_{opt(i)}$ for adjustment Step 103, operative to adjust the metric using a predetermined back-off factor (FIG. 10) referenced by the adjustment of the mean C/I by factor ($P_{opt(i)} - P$).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of selecting a combination of modulation and coding according to Olofsson to the data rate capacity maximization of Paulraj for the purpose of selecting the RF link that provides the best user quality value.

Claim 6, Paulraj teaches a decoder operative to provide a status of each received transmission for a particular packet of data (FIG. 4, column 9 lines 52-67) referenced by S-T Decoders unit 88 with S-T decoders 89 operative on respective packet streams, and a controller operative to provide feedback information comprised of the particular rate and an indication of the packet status (FIG. 5A, column 10 lines 66-67, column 11 lines 1-14) referenced by S-T Code Lookup block 100 providing signal statistics Feedback 64.

Claim 7, Paulraj teaches an apparatus (FIG. 7) referenced by the OFDM receive unit, in a wireless communication system (FIG. 1) referenced by the wireless BTS transmit unit

12 to Subscriber receive unit 14D, comprising means for identifying a set of parameters for the data transmission (column 4 lines 1-12) referenced by the receiver statistical unit obtaining the quality parameters signal-to-noise, power level, crossing rate, BER from the processed streams, means for estimating one or more characteristics of the communication channel (FIG. 7, column 9 lines 33-67, column 12 lines 25-36) referenced by the space-frequency matrix channel estimator 130 which assess the quality parameter of the channel including SINR, SNR, power level and LCR, means for deriving a metric for an equivalent channel based on the set of parameters and the one or more estimated channel characteristics (FIG. 4, column 9 lines 52-67, FIG. 6, column 12 lines 11-24) referenced by signal statistics unit 90 assessing the quality parameter including metric SNR based on the outputs of Multi-Channel Estimator and the use of training unit 70 to establish equivalent channel characteristics, means for determining a threshold signal quality required for the equivalent channel to support the particular rate (Abstract lines 11-17) referenced by the level crossing duration of a predetermined threshold or a parameter of the data which includes SNR, means for indicating whether or not the particular rate is supported by the communication channel based on the metric and the threshold signal quality (FIG. 8, column 7 lines 57-67, column 8 lines 1-22) referenced by the optimization of data throughput and determination of the S-T code based on meeting target SINR threshold of value p. Paulraj does not teach a means for adjusting a metric according to a back-off factor and comparing the adjusted metric to the threshold signal quality.

Olofsson teaches a means for adjusting the metric to form an adjusted metric (FIG. 7, column 10 lines 34-52, FIG. 10, column 12 lines 47-67, column 13 lines 1-18) referenced by the Radio Base Station Transceiver and calculation of the Optimal Power $P_{opt(i)}$ for adjustment Step 103, wherein adjusting is done according to a back-off factor (FIG. 10) referenced by the Step 105 factor $P_{opt(i)}$ is determined by the minimum function for use in adjusting the mean C/I, the back-off factor designed to minimize Packet Error Rate (PER) (column 12 lines 37-46) referenced by the optimal power based on the target C/I target which is based on the quality value Block Level Error Rate BLER, means for comparing the adjusted metric to the threshold signal quality (FIG. 10) referenced by truncation of $P_{opt(i)}$ through the minimum function Step 105, adjusting the threshold signal quality (FIG. 10) referenced by calculation of the mean C/I by the adjustment factor ($P_{opt(i)} - P$), selecting a data rate in response (FIG. 9, FIG. 10, FIG. 11) referenced by selection of an optimum combination Step 109 and use of P_{opt} on selected link Step 111 with the C/I factor based on the BLER desired as performed by Selector unit 118.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of selecting a combination of modulation and coding according to Olofsson to the data capacity parameter maximization of Paulraj for the purpose of selecting the RF link that provides the best user quality value.

Claim 13, Paulraj teaches an apparatus for determining a data capacity for a data transmission (FIG. 7, Abstract lines 1-7) referenced by the OFDM receive unit to

maximize data capacity, over a communication channel in a wireless communication system (FIG. 1) referenced by the wireless BTS transmit unit 12 to Subscriber receive unit 14D, comprising means for estimating one or more characteristics of the communication channel (FIG. 7, column 9 lines 33-67, column 12 lines 25-36) referenced by the space-frequency matrix channel estimator 130 which assess the quality parameter of the channel including SINR, SNR, power level and LCR, means for deriving a metric for an equivalent channel based on the set of parameters and the one or more estimated channel characteristics (FIG. 4, column 9 lines 52-67, FIG. 6, column 12 lines 11-24) referenced by signal statistics unit 90 assessing the quality parameter including metric SNR based on the outputs of Multi-Channel Estimator and the use of training unit 70 to establish equivalent channel characteristics, means for determining a threshold signal quality required for the equivalent channel to support a particular rate (Abstract lines 11-17) referenced by the level crossing duration of a predetermined threshold or a parameter of the data which includes SNR. Paulraj does not teach a means for adjusting a metric according to a back-off factor and comparing the adjusted metric to the threshold signal quality. Paulraj does not teach data rate, adjusting the metric to minimize packet error rate nor selecting the data rate in response.

Van Nee teaches data rate (column 3 lines 13-28) referenced by the OFDM system transmission rate scaled based on operating parameters.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the data rate of van Nee to the data capacity of Paulraj for the purpose of maximizing a communication parameter in a wireless network.

Olofsson teaches a means for adjusting the metric to form an adjusted metric (FIG. 7, column 10 lines 34-52, FIG. 10, column 12 lines 47-67, column 13 lines 1-18) referenced by the Radio Base Station Transceiver and calculation of the Optimal Power $P_{opt(i)}$ for adjustment Step 103, wherein adjusting is done according to a back-off factor (FIG. 10) referenced by the Step 105 factor $P_{opt(i)}$ is determined by the minimum function for use in adjusting the mean C/I, the back-off factor designed to minimize Packet Error Rate (PER) (column 12 lines 37-46) referenced by the optimal power based on the target C/I target which is based on the quality value Block Level Error Rate BLER, means for comparing the adjusted metric to the threshold signal quality (FIG. 10) referenced by truncation of $P_{opt(i)}$ through the minimum function Step 105, means for selecting a data rate in response to a result of comparing the adjusted metric to the threshold signal quality (FIG. 9, FIG. 10, FIG. 11) referenced by selection of an optimum combination Step 109 and use of P_{opt} on selected link Step 111 with the C/I factor based on the BLER desired as performed by Selector unit 118.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of selecting a combination of modulation and coding according to Olofsson to the data rate parameter maximization of Paulraj and van Nee for the purpose of selecting the RF link that provides the best user quality value.

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paulraj, van Nee and Olofsson as applied to claims 1, 2, 3, 5, 6, 7, 10, 11, 12, 13 above, and further in view of Cimini et al. (Patent number 5914933).

Claim 14, Paulraj teaches a method for determining data capacity for a data transmission over a communication channel in a wireless communication system (FIG. 1, column 3 lines 43-52, column 5 lines 45-58) referenced by the maximizing of data capacity from wireless a transmit unit of a BTS 12 to a stationary receive unit 14D, comprising estimating one or more characteristics of the communication channel (FIG. 4, column 7 lines 41-49, column 9 lines 32-51) referenced by the estimator 84 of the channel coefficients which depend on the channel communication parameter, deriving a metric for an equivalent channel based on the set of parameters and the one or more estimated channel characteristics (FIG. 4, column 9 lines 52-67, FIG. 6, column 12 lines 11-24) referenced by signal statistics unit 90 assessing the quality parameter including metric SNR and the use of training unit 70 to establish equivalent channel characteristics, determining a threshold signal quality required for the equivalent channel to support a particular data rate (Abstract lines 11-17) referenced by the level crossing duration of a predetermined threshold or a parameter of the data which includes SNR. Paulraj does not teach a computer program to perform the steps above,

data rate, adjusting the metric to minimize packet error rate nor selecting the data rate in response.

Van Nee teaches data rate (column 3 lines 13-28) referenced by the OFDM system transmission rate scaled based on operating parameters.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the data rate of van Nee to the data capacity of Paulraj for the purpose of maximizing a communication parameter in a wireless network.

Olofsson teaches adjusting the metric to form an adjusted metric (FIG. 10, column 12 lines 47-67, column 13 lines 1-18) referenced by the calculation of the Optimal Power $P_{opt(i)}$ for adjustment Step 103, wherein adjusting is done according to a back-off factor (FIG. 10) referenced by the Step 105 factor $P_{opt(i)}$ is determined by the minimum function for use in adjusting the mean C/I, the back-off factor designed to minimize Packet Error Rate (PER) (column 12 lines 37-46) referenced by the optimal power based on the target C/I target which is based on the quality value Block Level Error Rate BLER, comparing the adjusted metric to the threshold signal quality (FIG. 10) referenced by truncation of $P_{opt(i)}$ through the minimum function Step 105, selecting a data rate in response to a result of comparing the adjusted metric to the threshold signal quality (FIG. 9, FIG. 10, FIG. 11) referenced by selection of an optimum combination Step 109 and use of P_{opt} on selected link Step 111 with the C/I factor based on the BLER desired as performed by Selector unit 118.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of selecting a combination of modulation and

coding according to Olofsson to the data rate parameter maximization of Paulraj and van Nee for the purpose of selecting the RF link that provides the best user quality value.

Cimini teaches a computer program for implementation of an OFDM transmit block (FIG. 3, column 5 lines 55-67, column 6 lines 1-28) referenced by the programmable logic device which uses a computer program for execution.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of programming a PLD as suggested by Cimini to the data rate parameter maximization of Paulraj, van Nee and Olofsson for the purpose of reducing the peak-to-average power during transmission.

Allowable Subject Matter

4. Claims 4, 8, 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John L Shew whose telephone number is 571-272-3137. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

js

WELLINGTON CHIN
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